

LUMA, JAN.

## 21(3.4) PHASE I BOOK EXPLOITATION CZECH/2404

Mabanec, V., Doctoral, J. Havelska, Engineer; Zd. Hlavatcova, Doctor of Medicine; Zb. Hrdlicka, Engineer; J. Chudzik, Graduate in Technical; V. Soukup, Engineer; J. Kubo, Jan, Doctor of Natural Sciences; Professor; Jan, Engineer; and M. Vojcik, Graduate in Physics

Atom a jaderná technika (The Atom and Nuclear Engineering) Praha, Slez. vydalo, 1957, 290 p. (Series: Universita vydavna) 4,000 copies printed.

Reviewers: Bittner, Engineer; Draka, Engineer; Hrdlicka, Engineer; Kulka, Engineer; Spurny, Doctor; and Simandl, Engineer; Ed.: Stanislav Voboril.

PURPOSE: The book is intended for the general reader.

COVERAGE: The book outlines the principles and operation of nuclear power plants and the use of radioactive isotopes. The introductory chapters cover the fundamentals of nuclear physics and radioactivity. Several subsequent chapters deal with reactor physics, types of reactors, their engineering, control and

Card 2/12

instrumentation. Operating and planned nuclear power installations are described. A short chapter is devoted to the possibility of using nuclear power in transportation. The remaining chapters cover on radioisotopes for industry, and on radiobiology, radiation hazards and safety measures. No personalities are mentioned. There are 25 references. All Czech.

## TABLE OF CONTENTS:

TUMA, J.

"Water economy in metallurgic plants."

p. 95 (Hutnik, Vol.8, No. 3, March 1952, Praha, Czechoslovakia)

Monthly Index of East European Acquisitions (EEAI) LC, Vol. 7, No. 4, September 1958.

TUMA, J.; KUDLA, V.

"Turboaltermitors with internal cooling of conductors."

ELECTROTECHNICKY OPZOR, Praha, Czechoslovakia, Vol. 49, no. 5, May 1959

Monthly list of East European Accessions Index (EEAI), LC, vol. 3, no. 8,  
August 1959

Unclassified

TUMA, J. ; NADENIK, F.

Welded shaped water pipes with large profiles. p. 262.

VODNI HOSPODARSTVI. (Ministerstvo energetiky a vodniho hospodarstvi a Vedecka technicka spolecnost pro vodni hospodarstvi( Praha, Czechoslovakia, No. 6, June 1959.

Monthly List of East European Accession (EEAI), LC Vol. 9, no. 2, Feb. 1960.

Uncl.

Z/048/62/000/012/001/001  
D409/D301

AUTHOR: Túma, Jan, Engineer

TITLE: Soviet nuclear power plants

PERIODICAL: Věda a technika mládeži, no. 12, 1962, 412 - 415

TEXT: This popular science article lists some technical data of Soviet nuclear power plants under construction and/or in operation and gives a two-page flowchart of the heat-exchange cycle of the Novovoronez nuclear power plant and the fission reaction in a reactor with slow neutrons. Based on experience gained with the first experimental nuclear power plant in Obninsk near Moscow, several great nuclear power plants have been built in the USSR. The Beloyarsk nuclear power plant, nearing completion, will have an efficiency of 35 - 38 % and is equipped with four 285-Mw, graphite-moderated, pressurized-water cooled reactors delivering 405 tons of steam per hour to the four 100-Mw turbines. The primary cooling cycle is operated with 110 atm. pressurized water, the secondary cycle with 500°C superheated steam. The main technical problem encountered in the reactor construction was to keep heavy radiation-shielding admixtures (iron Card 1/2

Soviet nuclear power plants

Z/048/62/000/012/001/001  
D409/D301

and ore) evenly distributed during concrete setting. In the Voronezh Oblast, a fully automated nuclear power plant is nearing completion which will have an electrical output of 420 Mw and two pressurized-water reactors each with a thermal output of 760 Mw. It is fuelled by 350 assemblies of UO<sub>2</sub> slightly enriched with U-235, and its total uranium charge amounts to 40 tons. The primary cooling cycle has 6 loops operated with 275°C/100 atm. pressurized water, the 250°C/32 atm. superheated steam of the secondary cycle drives three 70 Mw turbogenerators. The nuclear power plant under construction in the Leningrad Oblast is of the same design. Power plant buildings are made predominantly of prefabricated concrete elements, have 120-m high ventilation stacks and large underground tanks for waste water. Additional nuclear power plant projects in the USSR include a boiling-water reactor with a 70 Mw turbine under construction in the Ulyanovskaya Oblast, a 50 Mw liquid-sodium cooled reactor, a homogeneous reactor under construction on the Volga River, and a fast breeder which will produce plutonium or U-233 from U-238 or thorium respectively. It is expected that fast breeders will still be improved so that a 100 million kW power plant can be realized which consumes only 1,000 tons of uranium annually. There are 3 figures and a 2-page flowchart.

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Z/048/62/000/002/001/002  
D291/D304

AUTHOR: Tuma, Jan, Engineer

TITLE: On automatic installations which control RR traffic

PERIODICAL: Věda a technika mládeži, no. 2, 1962, 52-55 and 67

TEXT: This is a popular article on automatic control and safeguarding train movements and classification-yard operations. The author briefly describes the development and functions of automatic blocks, car retarders, automatic train stops, automatic humps, etc, and refers to such equipment installed in the CSSR. Soviet automatic blocks are now installed on 500 km of Czechoslovak mainline tracks and eliminated the need to build a third track on the Prague - Česká Třebová line. By 1965, it is planned that automatic blocks will be installed on 1,180 km, line automatic train stops on 1,000 km, and simplified point automatic train stops on an additional 4,900 km of Czechoslovak mainline tracks. Centralized train control and safeguarding systems, where all signals and switches are

Card 1/2

On automatic ...

Z/048/62/000/002/001/002  
D291/u304

controlled from one tower and train movements are indicated by colored lights on a master board, have been installed in Kolín, Prague-Smíchov, Bratislava, Zvoleň, and Ústí nad Labem, and will be installed in a total of 126 main RR stations by 1965. Soviet car retarders are already installed in Nymburk and ten other classification yards, and a fully automated hump, controlled by a Soviet computer, will be installed in Česká Třebová. A central RR traffic control from a single tower with facilities for communication between the dispatcher and the engineer on route will be introduced on the single-tracked Plzeň - Cheb line. All control systems of the entire Czechoslovak main RR line from Prague and Ústí nad Labem up to Čierná are scheduled to be fully automated by 1967. There are 6 figures. [Abstractor's note: Drawings on pp 54-55 are by Engineer Radovan Černý].

Card 2/2

L 21488-66 AWP(1) IJP(c) CG/BB  
ACC NR: AP6010966

SOURCE CODE: CZ/0080/65/000/003/0067/0070

AUTHOR: Tuma, Jan (Engineer)

ORG: Graduate School of Economics, Prague (Vysoka skola ekonomicka)

TITLE: Teaching machines and programmed teaching

SOURCE: Automatizace, no. 3, 1965, 67-70

TOPIC TAGS: teaching machine, computer programming

ABSTRACT: This article describes the various types of teaching machines developed in Czechoslovakia according to different methods of instruction and the problems in their development. Orig. art. has: 5 figures. [JPRS]

SUB CODE: 05, 09 / SUBM DATE: none / ORIG REF: 006 / OTH REF: 001  
SOV REF: 001

Card 1/1 PB

UDC: 37: 62-53: 681.142-83

CECH,M.; TUMA, J.; ZIZLAVSKY, V.

Enterogenic autotoxic methemoglobinemia in an infant  
(Stokvis-Talma syndrome). Cesk. pediat. 19 no.7:619-623  
J1 '64

1. I. detska klinika (prednosta: prof. dr. Z. Brunecky) a kli-  
nika nemoci z povolani (prednosta: doc. dr. J. Vyskocil) le-  
karske fakulty UJEP [University J. E. Purkyne] v Brne.

VYSKOCIL, Jiri; TUMA, Jiri; SKLENSKY, Bohuslav

Experimental study on elimination of dust from the lung. I. Relation of bronchial and lung changes to elimination of silica dust in rats. Prac. lek. 16 no. 3:97-101 Mr'64

1. Klinika nemoci z povolani lekarske fakulty UJEP [University J.E.Purkyne] v Brne; prednostaz doc. dr. J. Vyskocil.

CHALY, K.; TURKOVÁ, M.; LIMA, J.

Microbial transformations of steroids. XIV. Separation of  
Androstan-17-hydroxy- $\alpha$ -mers. Folia microbiol. (Prague) 9  
no.6:380-382 1964.

1. Research Institute of Pharmacy and Biochemistry, Prague.

TUMA, Jan, inz.

Teaching machines and programmed teaching. Automatizace 8 no.3:  
67-70 Mr '65.

1. Higher School of Economics, Prague

CZECHOSLOVAKIA

CAPEK, O.; HANC, O.; TADRA, M.; TUMA, J.; Research Institute of Pharmacy and Biochemistry (Vyzkumny Ustav pro Farmacie a Biochemii), Prague.

"Microbial Transformation of Steroids. XXVI. An Improved Method of Preparation of Cortisone from Cortexolone."

Prague, Ceskoslovenska Farmacie, Vol 15, No 4, May 66, pp 198-199

Abstract [Authors' English summary modified]: Beauveria bassiana strain No 663 gives a yield of over 90% in the transformation of cortexolone to epicortisol. The raw epicortisol is acetylated and oxidized selectively to cortisone acetate, without isolating the intermediate products. The acetate is saponified with sodium methylate; free cortisone is obtained with a yield of 78% calculated on the basis of the original cortexolone. With recrystallized cortexolone the yield increases to 80%. 3 Czech references. (Manuscript received 3 Aug 65).

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Aerospace Medicine

CZECHOSLOVAKIA

PIPAL, M.; TUMA, J.; STVERAK, J.; RYBAK, F.; CUPALOVA, D.; BILA, J.; Institute of Aviation Medicine, Prague. Orig. version not given 7.

"Blood Sugar Level and Mental Performance in Man Under Heat Load."

Prague, Activitas Nervosa Superior, Vol 8, No 2, Jun 66, pp 210-211

**Abstract:** Experiments were conducted on 30 men aged 20 - 22 years in the cockpit of a jet plane at 50°C and 17% RH. The exposure lasted for 120 minutes, followed by 60 min. of cooling to 20-22°. The subjects tolerated the high temperature rather badly as far as their comfort was concerned. Quantitative output of their mental performance was increased by the exposure, but the quality was low, mainly when activity without external stimulation was required. The temperature did not cause stress, but disturbed the equilibrium of glycide metabolism. No references. Submitted at the 4th Conf. of Exper. and Clin. Study of Higher Nerv. Functions, at Mar. Lazne, 12-15 Oct 65. Article is in English

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Medical Faculty of the University of J. E. Purkyně at Brno, Head Assistant Professor doctor J. Vyskocil [Klinika nemoci z povoleni lekarske fakulty UJEP v Brno, prednosta doc.dr. J. Vyskocil].

"Elimination of Silica Dust from the Lungs of Rats and the Influence Upon it Caused by Inhalation of Aerosols".

Prague, Pracovni Lekarstvi, Vol 15, No 8, 1963, pp 334-338

Abstract: A short term experiment on rats was performed. Their lungs were dusted with silica (96% silicon dioxide with 72% of the particles smaller than 1.25 microns). The application was made in 3 days, and the rats were subjected to physical exertion during the dusting. The initial load of dust was 720-900 gamma in the lungs of a rat and the elimination after a month was 63 to 68%. Inhalation of calcium chloride in mineral water had no significant effect; inhalation of a solution containing fluorides decreased the elimination by about 50%.

1 Figure, 4 Tables, 7 Western, 4 Czech references.

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6

PIPAL, M.; MORAVEK, M.; TUMA, J.

Effect of fasting of several days' duration on some higher nervous activity functions in man. Activ. nerv. sup. 4 no.2:187 '62.

1. Ustav leteckeho zdravotnictvi.

(CENTRAL NERVOUS SYSTEM physiol) (FASTING)

VYSKOCIL, J.; TUMA, J.; DLUHOS, M.

Effect of acute inflammation on the distribution and elimination of quartz dust from rabbit lungs. Experimental study on elimination of dust from the lungs. Scr. med. fac. med. Brunnensis 36 no.7:351-362 '63.

1. Klinika nemoci z povolani UJEP v Brne. Prednosta: doc.dr. J. Vyskocil, a II patologicko-anatomicky ustav UJEP v Brne. Prednosta: prof. dr. M. Dluhos.

\*

TUMA, J. VYSKOCIL, J.

Elimination of silicon dust from the rat lung and the effect  
of aerosol inhalation. Prac.lek.15 no.8:334-338 0'63.

1. Klinika nemoci z povolani lekarske fakulty UJEvP v Brne,  
prednosti doc.dr.J.Vyskocil.

\*

L 12948-66

ACC NR: AP6005670

SOURCE CODE: CZ/0079/65/007/002/0181/0183

AUTHOR: Tuma, J.; Sturma, A.; Kanturek, V.; Dankova, J.

26 B

ORG: Institute of Aviation Medicine, Prague; Military Academy, Prague; Institute of Industrial Hygiene and Occupational Diseases, Prague

TITLE: Psychophysiological and biochemical study in university students during examinations [This paper was presented at the Third Interdisciplinary Conference on Experimental and Clinical Study of Higher Nervous Functions held in Marianske Lazne from 19 to 23 October 1964.]

SOURCE: Activitas nervosa superior, v. 7, no. 2, 1965, 181-183

TOPIC TAGS: psychophysiology, biochemistry, man, vision

ABSTRACT: Methods relating to different functional levels of higher nervous functions were used. An arithmetical test, a test for critical frequency of intermittent visual stimulation, and the clock test (stopping a clock at a given point on the dial). Twelve students aged 30-35 years were studied. In all students an increase in the performance after the examinations was found. The flicker fusion frequency was only slightly altered. However, neurotic students showed a lower performance with the clock test after the examinations. The changes were not due to the importance of the load but more to the conditions under which the tests were made. The CNS showed changes that indicate a negative effect of mental strain. Orig. art. has: 1 table. [JPRS]

SUB CODE: 05, 06 / SUBM DATE: none

Card 1/1 4/03

CZECHOSLOVAKIA

UDC 614.715(541.182.3)-073 5.81

SIMECEK, Jaroslav; TUMA, Jiri; Institute for Hygiene of Work and Occupational Diseases (Ustav Hygieny Prace a Chorob Z Povolani), Prague, Director (Reditel Prof Dr J. TEISINGER. Research Institute for Air Technology (Vyzkymny Ustav Vzduchotechniky), Prague.

"Determination of Dust Dispersion."

Prague, Pracovni Lekarstvi, Vol 18, No 3, Apr 66, pp 116 - 120

Abstract: The authors studied standard conditions for optical microscopy to find the accuracy and reproducibility of dust dispersion determination, and find a suitable gravimetric method for quantitative dust determination. The behavior of aerosols can be determined on the basis of the geometrical shape of the particles, from hydrodynamic properties of the particles, from their optical properties. The methods of expressing the dispersity of dust are described. The expression of the dispersity is discussed. The connections between the number of particles and their weight are discussed. 1 Figure, 1 Table, 6 Western, 4 Czech, 2 Russian references. (Manuscript received 27 Apr 65) /

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- 24 -

400  
L 41519-65 ARG/EE0-2/ENG(j)/Z-T(d)/FDD/FSS-2/ENG(r)/Z-T(1)/FBO/EMP(e)/EMP(f)/  
EMP(g)/EMP(v)-3/EPF(c)/ECC(k)-2/ENG(s)-2/EMP(i)/EMP(f)/ENG(v)/EMP(c)/EMP(v)/EHA(1)/  
EPR/EMP(j)/T-2/ENG(a)-2/EMP(h)/EPA(bb)-2/ECC(c)-2/EED-2/ENG(c)/FCS(k)/EMP(b)/  
AM/045110 .. Pl-4/Pn-4/Pz-4/Pn-4/ BCCC EXPLOITATION. Pl-4/Fn-4/Pn-4/Pz-4/ /163  
Po-4/Pn-5/Pn-4/Pac-4/Fn-4. IJP(c) AST/TT/MI/DD/R4/GH/EC/MH 141  
Barvir, Miroslav, (Engineer); Benes, Konrad, (Professor, Doctor); Boucka, Jiri, (Doctor);  
(Doctor); Hudil, Ivo, (Graduate in Philosophy); Cejlechi, Zdenek, (Candidate of B+1  
Physical and Mathematical Sciences); Cech, Milan, (Doctor); Malezal, Vladimir, (Doctor);  
(Doctor); Dvorak, Antonin, (Candidate of Medical Sciences); Dvorak, Jaref, (Doctor);  
Cuth, Vladimir, (Candidate of Medical Sciences, Docent, Doctor); Horak, Zdenek,  
(Doctor of Physical and Mathematical Sciences, Corresponding Member of the  
Czechoslovak Academy of Sciences, Professor, Doctor); Hospodar, Jan, (Doctor of  
Physical and Mathematical Sciences, Doctor); Kleecek, Josip, (Doctor); Klest,  
Emil, (Candidate of Physical and Mathematical Sciences); Kolodovsky, Milan; Koml,  
Vladimir, (Doctor); Kopecky, Miloslav, (Candidate of Legal Sciences); Krvsky,  
Ladislav, (Candidate of Physical and Mathematical Sciences); Kviz, Zdenek, (Can-  
didate of Physical and Mathematical Sciences); Ledvina, Milan, (Engineer); Malek,  
Vladimir, (Doctor); Moravec, Milan, (Candidate of Medical Sciences); Mrazek,  
Jaroslav, (Candidate of Medical Sciences, Engineer); Mrazek, Jiri, (Candidate of  
Technical Sciences); Neuzil, Iudek, (Doctor); Novotny, Zdenek, (Candidate of  
Physical and Mathematical Sciences); Novotny, Zdenek, (Doctor); Pernigr, Jaroslav,  
(Doctor); Candidate of Physical and Mathematical Sciences); Peseck, Rudolf, Professor,  
Doctor, Engineer); Pival, Milonlav, (Doctor of Technical Sciences, Corresponding  
member, of the Czechoslovak Academy of Sciences); Plavec, Miroslav, (Doctor);  
Pokorny, Zdenek, (Candidate of Physical and Mathematical Sciences, Docent, Doctor);

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L 41519-65  
AK4045110

14

Ruml, Vladimir, (Candidate of Medical Sciences, Doctor); Sadil, Josef, (Doctor of Physiological Sciences); Schnal, Ladislav; Stverak, Jiri, (Doctor); Svetka, Zdenek, (Doctor); Tuma, Jaroslav, (Candidate of Physical and Mathematical Sciences, Doctor); Tvrd, Vaclav, (Docent, Engineer); Ulehla, Ivan, (Candidate of Technical Sciences, Professor, Doctor); Valniecek, Boris, (Candidate of Physical and Mathematical Sciences, Doctor); Vanyack, Vladimir, (Candidate of Physical and Mathematical Sciences, Docent, Doctor); Vlasak, Marian, (Candidate of Physical and Mathematical Sciences; Doctor); Voda, Miloslav, (Engineer)

Principles of astronautics (Zaklady kosmonautiky) Prague, Orbis, 1964. 445 p. illus., biblio. 5000 copies printed.

TOPIC TAGS: cosmonautics, rocket, satellite, space flight, missile 15

PURPOSE AND COVERAGE: This publication is a popular scientific reference book for people working in cosmonautics. The book presents a survey of cosmonautics and space flight up to 1 June 1963.

TABLE OF CONTENTS:

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TUMA, J. ; STURMA, A.; KANTUREK, V.; DANKOVA, J.

A psychophysiological and biochemical study in university students during exams. Activ. nerv. sup. (Praha) 7 no.2: 181-183 '65

1. Institute of Aviation Medicine, Prague; Military Academy, Prague and Institute of Industrial Hygiene and Occupational Diseases, Prague. 2. J. Tuma's address: Praha 6, Na dlouhem laru 14.

TUMA, Jaroslav

Results of the Third National Conference on the Treatment of  
Feed Water for High Pressure Power Plants. Tech praca 17 no.3:  
221 Mr '65.

1. Ceskomoravska-Kolben-Danek Dukla National Enterprise, Prague.

CZECHOSLOVAKIA

TUMA, Jaroslav, MD, Lt Col, Institute of Aviation Medicine, (Ustav leteckeho zdravotnictvi,) Prague.

"Laboratory Tests of Ability to Analyze Complex Field of Stimuli in Relation to Flight Duty."

Prague, Vojenske zdravotnicke listy, Vol 32, No 2, Apr 63; pp 66-71.

Abstract [ English summary modified] : Description of device and method for testing discrimination and rapidity of response to multiple stimuli which may occur in random sequence and frequency, requiring various types of motor responses; results in 340 persons, mostly pilots or flight cadets. Various correlations are tabulated. Five tables, 2 photographs; 1 Soviet personal communication and 7 Western references.

1/1

KULDA, Vojtech, inz.; TUMA, Jaroslav

Turboalternators with internal cooling of conductors. El tech  
obzor 48 no.5:269-271 My '59.

TEJMAR, Jaroslav; TUMA, Jaroslav

Attempt to use the test of reproduction of the time interval in selection of workers. Pracovni lek. 13 no.4:178-180 My '61.

1. Ustav hygieny, Praha, red. doc. dr. Karel Symon, Ustav leteckeho zdravotnictvi.

(INDUSTRIAL MEDICINE)

TUMA, Jaroslav

Research on power plants, and their development, Tech praca 15  
no. 3:238-240 Mr '63.

1. Zavodni pobočka Československé Vedecko-technicke společnosti,  
Českomoravská- Kolben-Danek Dukla, Praha.

TUMA, Jiri; VYSKOCIL, Jiri; DLUHOS, Max

Biochemical studies of experimental pulmonary fibrosis. Pt.1.  
Scr. med. fac. med. Brunensis 38 no.2/3:85-106 '65.

1. Klinika nemoci z povolani lekarske fakulty University  
J.E. Purkyne v Brne (Prednosta: Prof. MUDr. Jiri Vyskocil)  
a II. patologicko-anatomicky ustav lekarske fakulty Uni-  
versity J.E. Purkyne v Brne (Prednosta: Prof. MUDr. Max  
Dluhos).

TUMA, Jiri, inz.; MUSIL, Frantisek, inz.

Construction of high buildings by the lift slab method. Poz stavby  
11 no. 2:106-107 '63.

TUMA, Jiří, inz.

Stress loaded flange plates of steel girders. Inz stavby 9 no.9:  
341-344 S '61.

1. Transporta, n.p., Praha.

TUMA Jiri, inz.

A new tower building in Pittsburgh. Inz stavby 12 no.11:  
517-518 i '64.

41361

S/081/62/000/018/018/059  
B177/B186

5.5650

AUTHOR: Tuma, Jiri

TITLE: A method and a device for measuring the concentration and  
particle size of aerosols

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 18, 1962, 302, abstract  
18I124 (Czechosl. patent 98334, January 15, 1961)

TEXT: Existing methods of measuring the concentration and particle size  
of aerosols, particularly when diluted and monodispersed, are based on  
successively passing monochromatic light of two wavelengths through a  
given volume of aerosol. The drop in the intensity of the light, owing to  
adsorption and scatter in the aerosol, is measured in each case. The ab-  
solute values of the measured quantities and the ratio between them deter-  
mine respectively the concentration and the particle size of the aerosol.  
A disadvantage of the optical measurements is the asynchronism, which may  
lead to errors due to the unsteady state of the aerosol. The proposed  
method eliminates these disadvantages by measuring the scatter and absorp-  
tion of the light by the aerosol on the two wavelengths practically simul-  
Card 1/2

A method and a device ...;

S/081/62/000/018/018/059  
B177/B186

stantaneously and continuously. A parallel beam of rays from a source, passing through a condenser, is focused and passed through a bulb containing the aerosol under examination. The light then passes through 2 light filters inserted in an obturator and falls on a photo-element. The obturator consists of a ring divided into equal sectors in which the light filters are inserted successively. The signals arriving at the photo-element continuously possess a constant and a variable component, the first of which is a measure of the concentration of the aerosol, and the second a measure of the particlesize. These signals are amplified and recorded.

[Abstracter's note: Complete translation.]

Card 2/2

SUVA, Jaroslav; TUMA, Jiri, inz.

Direction of the electrification planning. Energetika Cz 11  
no.12:597-601 D '61.

PHASE I BOOK EXPLOITATION

CZECH/5248

Tůma, Jirí, Engineer

Letecké palubní přístroje (Aircraft Instruments) Prague, Náš vojáko, 1960.  
214 p. (Series: Knížnice svazarmu, sv. 1) 3,000 copies printed.

Resp. Ed.: Jirí Muk; Tech. Ed.: Blanka Jirásková.

PURPOSE: This textbook is intended for pilots, student pilots, and flying and aeronautical instructors.

COVERAGE: The book contains material for courses of instruction conducted in Czechoslovak aviation clubs. It is designed to give practical data supplementing textbooks on theory. The author briefly reviews basic theoretical principles, and then describes principal aircraft instruments and related devices. Basic information on related aircraft equipment is also given. The objective of the book is to explain the design of the various instruments and devices and show how to use them. Section 5 was written jointly by the author and Olga Krulišková, Engineer. Bohumil Langer wrote Section 15. There are 23 references: 20 Czech

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## Aircraft Instruments

CZECH/5248

(including 1 translation), 2 Polish, and 1 German.

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TUMA, K.

"How to replace greases in leather lubricants with chlorinated naphthalenes."

p. 158 (Kozarstvi) Vol. 6, no. 8, Aug. 1956  
Prague, Czechoslovakia

SO: Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 4,  
April 1958

TUMA, K.

"How to replace greases in leather lubricants with chlorinated naphthalenes."  
(To be contd.)

p. 134 (Kozarstvi) Vol. 6, no. 7, July 1956  
Prague, Czechoslovakia

SO: Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 4,  
April 1958

CZECHOSLOVAKI/Chemical Technology. Chemical Products and  
Their Application. Leather. Fur. Gelatine. Tanning  
Materials. Industrial Proteins.

II-35

Abs Jour: Ref Zhur-Khim., No 2, 1959, 6953.

Author : Tunn, Karel.

Inst :

Title : Substitution of Fats with Chlorinated Naphthalene in  
Fatliquoring of Leather.

Orig Pub: Kozarstvi, 1956, 6, No 7, 134-136.

Abstract: The fat-liquoring properties of products, in which Cl  
is bonded with the aromatic ring of naphthalene, were  
studied. It is important in the application of chlori-  
nated naphthalene to fat-liquoring of leather that its  
melting point should be low and that the goods made  
from the fat-liquored leather should not become hard

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CZECHOSLOVAKIA/Chemical Technology. Chemical Products and Their Application. Leather. Fur. Gelatine. Tanning Materials. Industrial Proteins.

1-35

Abs Jour: Ref Zhur-Khim., No 2, 1959, 6953.

and brittle at very low temperatures. Eutectic mixtures of monochloronaphthalene with dichloronaphthalene were prepared in order to obtain a low melting point, which increased the total content of chlorine in the fat-liquor mixture. The chlorinated product was separated into 4 fractions. The main fraction as far as the amount was concerned, obtained in the range from 220-260°, was tested in fat-liquoring specimens of leather with the application of 3% of the emulsifier NILO 0. These experiments confirmed the fat-liquoring properties of chlorinated naphthalene. - M. Lyuksemburg.

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"APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001757420008-7

APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001757420008-7"

TUMA, Karel, inz.

Reorganization of the production of prefabricated elements for  
building houses and public buildings in the North Bohemia Region.  
Poz stavby 13 no.1:8-13 '65.

1. Regional Association of Building Industry National Enterprises,  
Usti nad Labem.

## THE CLOTHES LINE

their picrates from  $H_2O$  ( $R$ , 1% yield, m.p. of the HX salts and picrates given):  $R = (I)$ , 35.5°;  $Br = 106$ , 201°;  $Pr = (II)$ ,  $Br = 90$ , 91°;  $Cl = 150$ , 187°;  $Ph = 87$ , 87.2°;  $CH_3 = (III)$ ,  $Br = 101$ , 103°;  $Eu = (IV)$ ,  $Br = 99$ , 100°;  $CH_2 = (V)$ ,  $Br = 98$ , 98.5°;  $CH = (VI)$ ,  $Br = 98$ , 98.5°;  $CH_2 = (VII)$ ,  $Br = 107$ , 107°;  $CH = (VIII)$ ,  $Br = 104$ , 104°;  $CH_2 = (IX)$ ,  $Br = 105$ , 105°;  $CH = (X)$ ,  $Br = 104$ , 104°;  $CH_2 = (XI)$ ,  $Br = 93$ , 203-2°, 174.5°;  $Ph = (XII)$ ,  $Br = 92$ , 141°;  $CH_2 = (XIII)$ ,  $Br = 92$ , 106-108°, 117.5°;  $Ph_2 = (XIV)$ ,  $Br = 90$ , 117°;  $N = CH_2 = (XV)$ ,  $Br = 90$ , 117°.

in 15 ml.  $\text{CH}_2\text{Cl}_2$ , reduced 9 min. exst. with water, dil.  $\text{HCl}$  (1:3), the salt of the ester salt added with 20%  $\text{Na}_2\text{CO}_3$ , exst. with  $\text{Et}_2\text{O}$  and the ester *in vacuo*. The picrates of the esters were prep'd. by prp. and the  $\text{HCl}$  salts by prp. with  $\text{HCl}$  in  $\text{Et}_2\text{O}$  yields. The  $\text{HCl}$  salts and the picrates and  $\text{HCl}$  salts are listed.  $\text{M}_1$  42 113°  
 $\text{I}$  78 132°  $\text{HCl}$  113°  $\text{II}$  69 144°  $\text{HCl}$  116°  $\text{III}$  69 145°  
 $\text{IV}$  79 140°  $\text{V}$  85 145°  $\text{VI}$  85 145°  $\text{VII}$  85 145°  $\text{VIII}$  85 145°  $\text{IX}$  85 145° (from  $\text{Et}_2\text{O}$ ) 84° 85°  $\text{HCl}$  116°  $\text{X}$  80-82°  $\text{X}$  58 155° 158° (perchlorate) 114°  $\text{XI}$

APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001757420008-7"

TUMA, M., doc. inz. CSc.

Influence of machine parameters and feed line on its dynamic stability. El. tech. obzor 53 no. 3: 146-150 Mr '64.

TUMA, M., inz.

"Values and units in electricity science" by Johannes Fischer.  
Reviewed by M. Tuma. El tech obzor 51 no.1:54-55 Ja '62.

TUMA, Milan, doc., inz., kandidat technickych ved; NASR, M.A., inz., kandidat technickych ved

A model method for determining the economic load of steam power stations operating within an electric power system. El tech obzor 51 no.11:571-577 N 162.

TUMA, Milan, doc., inz.

"Automatic control; principles and examples" by A. Leonard.  
Reviewed by Milan Tuma. El tech obzor 52 no.12:691 D '63.

TUMA, Milan, inz., kandidat technickych ved.

"Power system engineering. An introduction" by F. de la Chard.  
Reviewed by Milan Tuma. El tech obzor 51 no.10:559-560 O '62.

TUMA, M.; HON, A.

"Investigation of the electric field in the vicinity of a high-voltage insulator."

Elektrotechnicky Obzor. Praha, Czechoslovakia. Vol. 47, no. 10, Oct. 1958.

Monthly list of East European Accessions (EEAI), LC, Vol. 8, No. 6, Jun 59, Unclassified

TUMA, M.

Paint spray booths. Strojirenstvi 11 no.12, 938-941 D '61.  
1. Kovo-Finis, PVS, Praha.

TUMA, M., doc., kandidat technickych ved

"Electric-power engineering" by Holub, Vosicky. Reviewed by  
M. Tuma. El tech obzor 52 no.5:271-272 My '63.

TUMA, Milan, doc. inz.

"Series or shunt capacitors for power distribution ?" by Rune  
L. Olsson. Reviewed by Milan Tuma. El tech obzor 53 no. 5:  
277-279 My '64.

TUMA, Matija, dipl. inzenir strojnistva

Degree of exergy efficiency depending on the preheated  
air temperature with regard to various caloric values.  
Stroj vest 10 no. 1/2:19-21 Ap '64.

1. "Rog" Factory, Ljubljana, Trubarjeva 72.

RONES, Josef, inz.; TUMA, Miroslav

A continuous inhibitor analyzer for pickling baths. Tech praca  
14 no.12:980-982 D '62.

1. Kovo-Finis, n.p., Projekcni a vývojové středisko, Praha.

TUMA, Miroslav

Mechanization and automation in application of coating  
materials. Stroj vyr 11 no.11:558-562 N°63.

1. Kovo-Finis, n.p., PVS, Praha

TUMA, Miroslav

"Principles of galvanic technology" by Josef Doskar, Jan Gabriel.  
Reviewed by Miroslav Tuma. Stroj vyr 11 no.8:421 Ag '63.

TOMSA, Antonin, inz.; TUMA, Otto, inz.

Electronic tachometer. Letecky obzor 6 no.8:257 '62.

TOMSA, Jiri, inz.; TUMA, Oto, inz. C.

Measurement of turbine blade resonance vibration. Zpravodaj  
VZLU no. 3:167-169 '63.

Z/040/62/000/008/001/002  
D005/D102

AUTHOR: Tomsa, Antonín, Engineer and Tuma, Otto, Engineer

TITLE: Electronic revolution meter

PERIODICAL: Letecký obzor, no. 8, 1962, 257

TEXT: The article describes an electronic revolution meter with photoelectric pickup of revolutions that can measure speeds up to 100,000 rpm with a  $\pm$  1-rpm accuracy. In addition, the instrument can measure frequencies of sinusoidal and nonsinusoidal voltages up to 100 kc with an accuracy of  $\pm$  1 kc, and time intervals from several milliseconds to several hours with an accuracy of  $\pm$  10 microseconds. The revolution meter operates on the principle of pulsed pickup of revolutions with indication on a digital electronic counter. The entire set has a size of 490x730x340 mm and consists of a photoelectric pickup, a frequency substandard, an electronic timer and an electronic counter, all arranged into three interconnected panel units. The panel arrangement makes possible independent use of the individual panels e.g., as an independent counter with manual or remote

Card 1/2

Electronic revolution meter

Z/040/62/000/008/001/C02  
D005/C102

control; as a source of electric impulses with variable intervals; or as a source of accurate frequencies. There are 3 figures.

Card 2/2

TUMA, R.

Problems regarding two-shift work with steam shovels in all branches of construction is proposed to raise the low level of labor productivity.

P. 230. (STAVBA.) (Bratislava, Czechoslovakia) Vol. 4, No. 8, Aug. 1957

SO: Monthly Index of East European Accession (EEAI) LC. Vol. 7, No. 5, 1958

SNOBL, O.; TUMA, S.

Diagnostic difficulties in roentgen examination of congenital diaphragmatic hernia and pulmonary sequestrations. Cesk. pediat. 18 no.4:320-328 Ap '63.

1. Katedra fakultni pediatrie fakulty detskeho lekarstvi KU v Praze, vedouci prof. dr. J. Houstek.

(DIAPHRAGMATIC HERNIA) (LUNG DISEASES)  
(THORACIC RADIOGRAPHY) (PNEUMOTHORAX)  
(PNEUMOPERITONEUM, ARTIFICIAL)  
(DIAGNOSIS, DIFFERENTIAL)

SNOBL, O.; COPOVA, M.; TUMA, S.

Intrathoracic round shadows in childhood and their differential diagnosis. Cesk. pediat. 18 no.10:922-930 0 '63.

1. II detska klinika fakulty detskeho lekarstvi v Praze,  
prednosta prof. dr. J. Houstek. DrSc.

(THORACIC RADIOGRAPHY) (ABNORMALITIES)

(PARASITIC DISEASES) (THORACIC DISEASES)

(THORACIC NEOPLASMS) (DIAGNOSIS, DIFFERENTIAL)

TUMA, Stanislav, inz.

"Electric automation equipment in industry" by Jiri Triska.  
Reviewed by Stanislav Tuma. Sklar a keramik 13 no.5:3 of cover  
My '63.

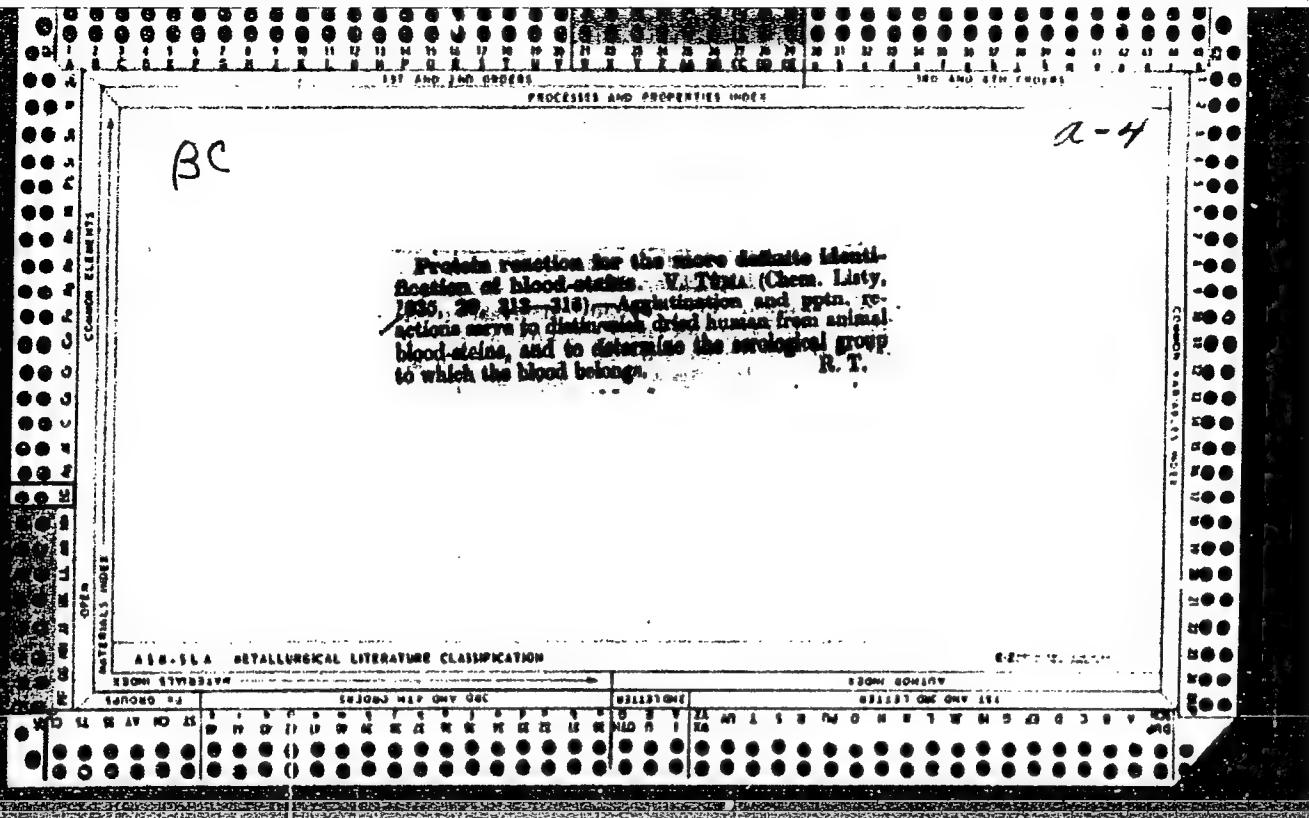
CERMAK, J.; TUMA, S.; ZAPLETAL, A.

Volume of the heart and its relation to the height, weight  
and body composition in obese boys. Cesk. pediat. 20 no.10:  
867-872 0 '65.

1. Vyzkumny ustav telovychovny v Praze (prednosta doc. dr.  
E. Eiselt, CSc.) a II. detska klinika fakulty detskeho lekarstvi  
Karlovych University v Praze (prednosta prof. dr. J. Houstek, DrSc.).

TUMA, V.

Spray drying plant. Zdravot tech 6 no.2:91 '63.



TUMA, V.

Contribution to the question of drying polyvinyl chloride. p. 161.

Ceskoslovenska vedecka technicka spolecnost pro zdravotni techniku a  
vzduchotechniku. SBORNIK. Praha, Czechoslovakia. No. 3, 1958.

Monthly list of East European Accessions (EEAI) LC, Vol. 8, No. 10.  
Oct. 1959.

Uncl.

TUMA, V.

Psychrometer with semiconductor thermometers. Zdravot tech 6  
no.2:91-92 '63.

TUMA, V., inz. kandidat technickych ved.

Ammonium sulfide drying room. Zdravot tech 7 no. 2:79 '64.

Conference on advanced methods of drying in the chemical industry.  
Ibid.:79-80

TUMA, V.

Spray drying plant. Zdravot tech 6 no.3:133 '63.

Tuma, V.

"Contribution to solving the problem of drying polyamide cuts.

p. 187 (Sbornik, No. 1, 1957, Praha, Czechoslovakia)

Monthly Index of East European Accessions (EEAI) 1C, Vol. 7, No. 6, June 1958

TUMA, Vaclav, inz. CSc.

Fleat manometer for determining low pressures. Zdravot tech 7 no. 6:244-249 '64.

Mobile fluid drier of grain. Ibid.:275.

Transmission of heat and transfer of substance in circular spray drier. Ibid.:275-276.

1. State Research Institute of Heat Technology, Prague.

**Albuminoid reactions for a more precise determination of blood traces.** Vladimír Čáslavský, *Chem. Listy* 29, 313 (1938).—For detg. isoagglutinins, T. washes the blood stain in a dil. type O serum for 2-3 days at a freezing temp. The ext. contg. the isoagglutinins is tested with types A and B erythrocyte suspensions. Since the isoagglutinins retain their activity only for several months, neg. test is not conclusive. For detg. the isoagglutinogens T. washes the blood spot several times for 45 min. with normal NaCl at freezing temp. to remove the isoagglutinins, adds a small vial of a normal saline soln. and places the soln. with the blood spot into an incubator for 30 min. The warm ext. contains the isoagglutinogens and will react with types A or B erythrocyte suspensions. The isoagglutinogen and isoagglutinin types must contain each other. Studied reactions made from drops of blood upon sterile slides may be modified by the cloth, by drying, by contaminants, etc., which may give rise to a pseudoadsorption, in which the agglutinins are not the isoagglutinins of the blood but came from a foreign source or from the albuminoids formed at the low temp. of the extn.

Frank Matech

APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001757420008-7"

TUMA, Zdenek, inz.

Measurement of important transistor properties. Sdel tech  
11 no.9:346-348 S '63.

L 23188-66 EHF(W)/EMAI(d)/T/ESR/11  
ACC NR: AP6008073

SOURCE CODE: CZ/0065/66/000/001/0064/0073

AUTHOR: Tuma, Janus--Tuma, Ganush; Rysava, Marie--Ryshava, Mariye; Lobl, Karel--  
Lebl, Karel 58

ORG: SVUM, Prague 59

TITLE: Contribution to the study of fracture surfaces on stainless steels of the  
type Cr18Ni9Ti A 19 B

SOURCE: Kovove materialy, no. 1, 1966, 64-73

TOPIC TAGS: stainless steel, annealing, carbide, corrosion, steel, material fracture,  
electron microscopy/Cr18Ni9Ti steel

ABSTRACT: The paper describes some results of an investigation of the fracture surfaces of type Cr18Ni9Ti steels performed by the electron microscopy method. In the process, polarization curves in different electrolytes were determined, and the chemical composition of the fracture surfaces was estimated. The differences in morphology as well as in the rate of precipitation of the  $M_23C_6$  carbides on the boundaries of grains were identified. While the carbides were precipitated after 5 minutes of annealing at 750C on the boundaries  $\gamma - \delta$ , intensive precipitations took place only after one hour of annealing on the boundaries  $\gamma - \gamma$ . This corresponded to the state when the material develops a tendency to intergranular corrosion. Selective dissolution of areas tending toward this corrosion can be attained in a 5 per cent formic acid electrolyte. The original amount of 18 per cent Cr was found reduced to 10 per cent in the region of fracture. A small increase in nickel

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content was observed which, however, cannot prevent the starting of corrosion. The results of investigation are in accordance with the Rollason's curve for the steel investigated, and confirm the theory that the tendency to intergranular corrosion of Cr18Ni9Ti steels is caused by the lowering of Cr content in the regions of grain boundaries after precipitation of  $M_{23}C_6$  carbides. Orig. art. has: 13 figures, and 1 table. [Based on Authors' abstract.]

SUB CODE: 11/ SUBM DATE: 27Apr65/ ORIG REF: 001/ OTH REF: 001/ SOV REF: 001/

Card 2/2 *200*



TUMADZHANOV I. I.

Tumadzhyanov, I. I. - "An outline of the swamp vegetation of the Teberda valley,"  
Trudy Tbilis. botan. in-ta, Vol. XII, 1958, p. 17-54, (Resume in Georgian), -  
Bibliog: p. 54

SO: U-1934, 29 Oct 53, (Letopis 'Zhurn 1 'nykh Statey, No. 16, 1959).

TUMADZHANOV, I. I.

Tumadzhanyov, I. I. and Mechedlishvili, P. A. "The post glacial mobility of forest vegetation in the Teberda valley according to pollen analysis data," Trudy SSSR. botan. in-ta, Vol. XII, 1948, p. 12-85 (Resume in Georgian), -Bibliog: 22 items

SO: U-4924, 29 Oct 53, (Letopis 'Zhurnal 'nykh Stat'ey, No. 16, 1949).

TUMADZHANOV, I. I.

28317

(Sfagnovoye Boloto Khorla--Kyelb u lodnozhbya elbbrusa. (Flora). Zamyetki po sistyematikye i gyeografii ras tyenty (akad. Mank. Gruz. SSR, IM - T Botaniki), Byp. 15, 1949, S. 99-104- Ryeztumye na gruz. Yez. - Bibliogr: 6 Narv.)

So: Letopis No 34

TUMADZHANOV, I. I.

Data on the sedge family in the region of Mount Elbrus. Zam.po  
sist.i geog.rast. no.17:146-156 '53. (MLRA 8:9)  
(Elbrus, Mount--Sedges)

TUMADZHANOV, I.I.

Professor Nikolai Ivanovich Kuznetsov and the study of the history  
of Caucasian forest vegetation. Bot. zhur. 42 no.9:1315-1324 S '57.

(MIRA 10:9)

1. Institut botaniki Akademii Grozinskoy SSR, Tbilisi.  
(Kuznetsov, Nikolai Ivanovich, 1864-1932) (Caucasus--Forest ecology)

TUMADZHANOV, I.I.

History of vegetation landscapes in the western part of the  
Skalistyye Mountains. Trudy Tbil.bot.inst. 20:363-410  
1959. (MIRA 13:8)  
(Skalistyye Mountains—Paleobotany)  
(Mountain ecology)

TUMADZHANOV, I.I.

Stunted forests and growths of creeping shrubs in the Teberda basin  
in connection with landscape succession in the subalpine region of  
the northern slope of the Greater Caucasus. Probl. bot. 5:148-162  
'60. (MIRA 13:10)

1. Botanicheskiy institut AN GruzSSR, Tbilisi.  
(Caucasus--Mountain ecology)

TUMADZHANOV, I.I.

Principal features of the plant cover in the region of moderately high mountains of the northwestern Caucasus with regard to the inversion of landform belts. Trudy Tbil.bot.inst. 21:157-213 '61.  
(MIRA 14:10)

(Georgia--Mountain ecology)

TUMADZHANOV, I.I.

Arkhyz peat bog in the upper Great Zelenchuk Valley as a relict of  
the Ice Age. Probl. bot. 6:66-73 '62. (MIRA 16:5)  
(Arkhyz region—Peat bogs)

TUMADZHANOV, I.I.; KETSKHOVELII, N.N., red.; CHICHUA, S.K., red.  
izd-va; DZHAPARIDZE, N.A., tekhn. red.

[Fractional geobotanical zoning of the northern slope of  
the Greater Caucasus] Opyt drobnogo geobotanicheskogo  
raionirovaniia severnogo sklona Bol'shogo Kavkaza; na pri-  
mere Karachaia. Tbilisi, Izd-vo AN Gruz.SSR, 1963. 240 p.  
(MIRA 16:12)

(Caucasus—Phytogeography)

TUMADZHANOV, I.N.; MARGALITADZE, N.A.

History of forests of the Kartlian and Kakhetian Ranges in the  
Holocene. Soob. AN Gruz. SSR 27 no.4:451-458 0 '61. (MIRA 15:1)

1. AN Gruzinskoy SSR, Institut botaniki. Predstavleno akademikom  
N.N. Ketskhoveli.

(Kartlia--Paleobotany, Stratigraphic)  
(Kakhetian Range--Paleobotany, Stratigraphic)

KHORUNZHEVA, L.D.; LYUDVIG, A.D.; MASHTAKOVA, Z.A.; TUMAILLOVA, L.M.

Extermination of favus in the Bakharden, Geok-Tepinsk, and Ashkhabad Rural Districts. Zdrav. Turk. 5 no.6:28-29 N-D '61. (MIRA 15:2)

1. Iz dispansernogo otdela (zav. - L.D.Khorunzheva) kozhno-venerologicheskogo instituta (nauchnyy rukovoditel' - prof. N.F. Rodyakin).

(TURKMENISTAN---FAVUS)

TUMAK, Ye.V., inzh.

Changing design loads for highway bridges. Avt.dor. 20 no.8:  
24-25 Ag '57. (MIRA 12:4)  
(Bridges--Design)

69845

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S/051/60/008/03/033/038  
E201/E191AUTHORS: Shukhtin, A.M., Yegorov, V.S. and Tumakayev, G.K.TITLE: A Continuous-Spectrum Emission Source Capable of Single  
Short-Duration FlashesPERIODICAL: Optika i spektroskopiya, 1960, Vol 8, Nr 3,  
pp 423-424 (USSR)

ABSTRACT: The authors describe a light source with continuous emission spectrum capable of single short-duration flashes of great intensity. The main part of the source is a demountable capillary discharge tube (Fig 1). The casing of the tube (13) is a thick Perspex cylinder inside which a porcelain capillary (14) of 3-4 mm internal diameter is fitted. Electrodes (1) and (10) are attached to the cylinder and the outer ends of the electrodes are fitted with windows (2). One of these windows is made of quartz or glass and is used for transmission of the flashes. Under working conditions the windows become dimmed by deposits on them and have to be cleaned or replaced regularly. A lens (5) is used to produce a parallel light beam. An auxiliary (starting) electrode (9) is placed in the middle of the discharge capillary. To reduce the strong inductance of the

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E201/E191

## A Continuous-Spectrum Emission Source Capable of Single Short-Duration Flashes

discharge circuit the electrodes were connected directly to terminals of a capacitor (0.56  $\mu$ F, charged to 25-30 kV) used to produce the discharges. The air pressure in the discharge capillary could be regulated so that at a given steady potential difference across the tube spontaneous discharges would not occur and that when a firing pulse was fed to the tube the discharge would occur rapidly and easily. In the tube described here the optimum air pressure was 130-150 mm Hg. The electrical circuit is shown in Fig 2. The authors used a hydrogen thyratron TGII-400/16 which ensured that a discharge was produced about 1  $\mu$ sec after an appropriate positive signal was applied to the thyratron grid. Fig 3, I, shows the oscillograms of the discharge current (curve a) and the optical flash (curve b); the optical flash existed only during the first half-period of the discharge, i.e. about 3-5  $\mu$ sec. Fig 3, II, shows the oscillograms of the optical flash and time marks which represent 1  $\mu$ sec each. The spectra of the flashes were found to be continuous

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A Continuous-Spectrum Emission Source Capable of Single Short-Duration Flashes

between 2200 and 6500 Å.

Card      There are 3 figures.      *X*  
3/3

SUBMITTED: November 12, 1959

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S/057/61/031/009/015/019  
B104/B102

AUTHORS: Dunayev, Yu. A., Tumakayev, G. K., and Shuktin, A. M.

TITLE: Interference method by Rozhdestvenskiy for studying gasdynamic processes in shock tubes

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 9, 1961, 1119-1126

TEXT: The authors describe an experimental arrangement for studying gasdynamic processes by an interference method suggested by D. S. Rozhdestvenskiy (Raboty po anomal'noy dispersii v parakh metallov (Papers on anomalous dispersion in metal vapors), Izd. AN SSSR, 1951). They give preliminary data on the concentration of normal and excited Hg atoms, the temperature of the gas flow behind a shock wave, and on values of the number f for some Hg lines. Figs. 1 and 2 show the experimental arrangement. The low-pressure chamber was made of copper and had a cross section of 38 by 76 mm; the distance between the diaphragm separating the low-pressure from the high-pressure section of the chamber, and the window was 1250 mm. The shock wave was generated by fracture of the diaphragm caused by the nitrogen or helium pressure of 5-30 atm produced in the high-pressure

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B104/B102

Interference method by ...

chamber. Differently thick diaphragms were used. The spectral apparatus used consisted of a spectroscope with a plane diffraction grating and a concave mirror with a focal length of 175 cm. The authors studied interference patterns of mercury vapors the shock wave in the spectral range of 2500-5800 Å for Mach numbers of 6-11.5. The concentration of excited atoms increased with rising  $M$ ; this increased the dispersion around the lines of the secondary series. The number of lines, near which hook-shaped dispersion patterns appeared, also increased. Dispersion was observed for  $M \sim 6.5$  near nine lines of the secondary series, for  $M \sim 8$  near 14 lines of the secondary series, and for  $M \sim 9.5$  near 18 lines of the secondary series. For  $M \sim 11.5$  a hook-shaped pattern was observed only near the lines of the visible triplet. At this value of  $M$  the shock wave propagated with 2000 m/sec. Table 1 gives the numbers  $N_k$  of atoms excited for  $M = 6.4-11.7$  as determined from the dispersion patterns near the visible Hg triplet (4047 Å, 4358 Å, 5461 Å). Table 2 gives temperatures of Hg vapor for three Mach numbers. The data obtained permit some statements on the transition probabilities, or the numbers  $f$ :

X

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Interference method by ...

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B104/B102

$$f_{4358} : f_{4078} : f_{3132} : f_{3126} : f_{2894} = 100 : 4 : 159 : 87 : 18,$$
$$f_{6461} : f_{3863} : f_{3655} : f_{3850} : f_{3341} : f_{3021} = 100 : 16 : 29 : 209 : 14 : 75.$$

The results prove the suitability of Rozhdestvenskiy's method for determining the transition probabilities of atoms. The authors thank S. E. Frish, Corresponding Member AS USSR, for attention and interest, as well as N. V. Sosulin, Laboratory Assistant, for his help. There are 5 figures, 2 tables, and 10 references: 7 Soviet and 3 non-Soviet. The two references to English-language publications read as follows: E. Russel, ~~✓~~ The Physics of Fluids, 2, no. 2, 207, 1959; E. Brannen et al., Nature, 175, no. 4462, 7, 810, 1955.

ASSOCIATION: Fizicheskiy institut Leningradskogo universiteta (Physics Institute of Leningrad University)  
Fiziko-tehnicheskiy institut im. A. F. Ioffe AN SSSR  
Leningrad (Physicotechnical Institute imeni A. F. Ioffe of the AS USSR, Leningrad)

Card 3/8

S/0057/64/034/001/0122/0127

AP 4009930

AUTHOR: Busygina, E. P.; Tumakayev, S. K.

TITLE: Measurement of the gas density behind a shock wave in a shock tube by an electron beam method

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.1, 1964, 122-127

TOPIC TAGS: density measurement, gas density measurement, electron gas density measurement, rapid gas density measurement, shock waves, argon shock waves, shock tube, shock tube shock waves

ABSTRACT: An apparatus is described for rapidly measuring gas densities in the pressure range from  $10^{-2}$  to 10-mm Hg by observing the change in electron beam current due to scattering by gas molecules. Density changes occurring in times of the order of a few microsec can be followed with an accuracy of 8 to 10 percent. The electron beam apparatus was mounted on a 3 x 30-cm rectangular shock tube and was employed to investigate the densities behind shock waves. The 30-keV electron beam was produced by an electron gun from a television kinescope. The beam entered the shock tube through a 1-mm opening covered by aluminum foil 5-microns thick. This

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